

Rare, Life-threatening Total and Acute Uterine Inversion Following Vaginal Delivery in a Rural Hospital Setting: A Case Report

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Introduction

Uterine inversion is a rare, life-threatening complication that occurs during the third stage of labor due to the collapse of the uterine fundus into the uterine cavity, presenting in approximately one in 2,000-23,000 deliveries¹. Due to the risk of severe hypotension and death due to blood loss or neurogenic shock, appropriate diagnosis and immediate active management is necessary to prevent maternal death¹. The pathophysiology of uterine inversion is not well established; however, excessive cord traction is thought to be the primary cause of this complication². Standard of care regarding uterine inversion includes fluid resuscitation, uterine replacement, and if needed, balloon tamponade for uterine atony^{3,4,5}.

Case Description

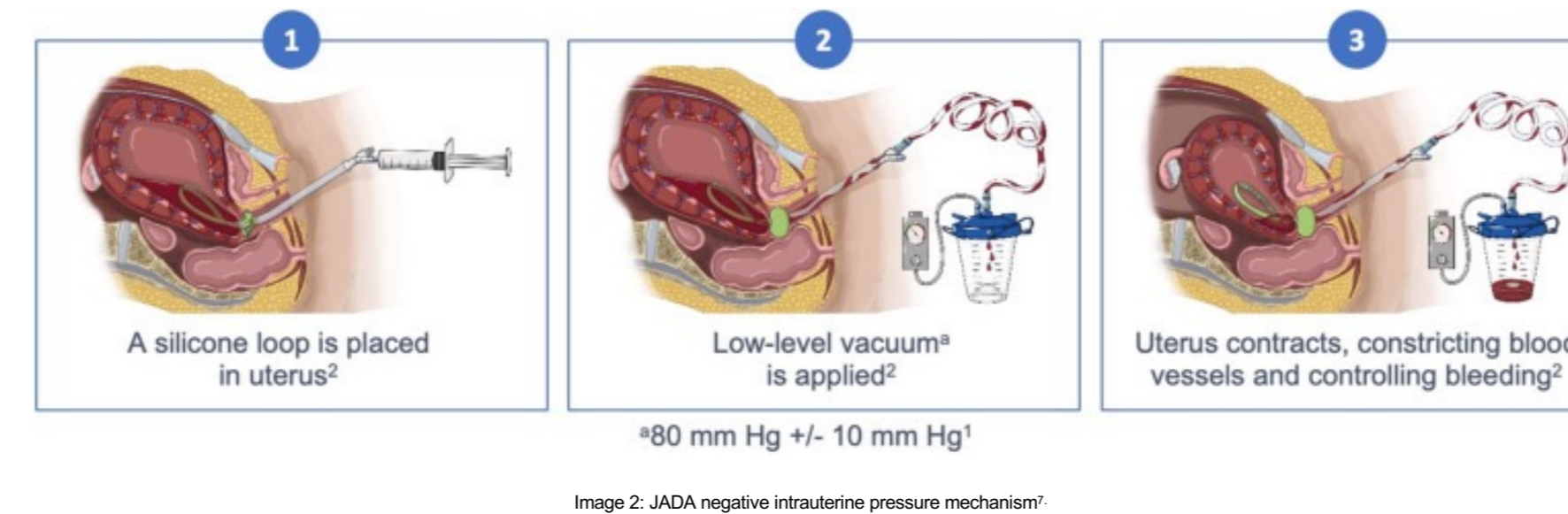
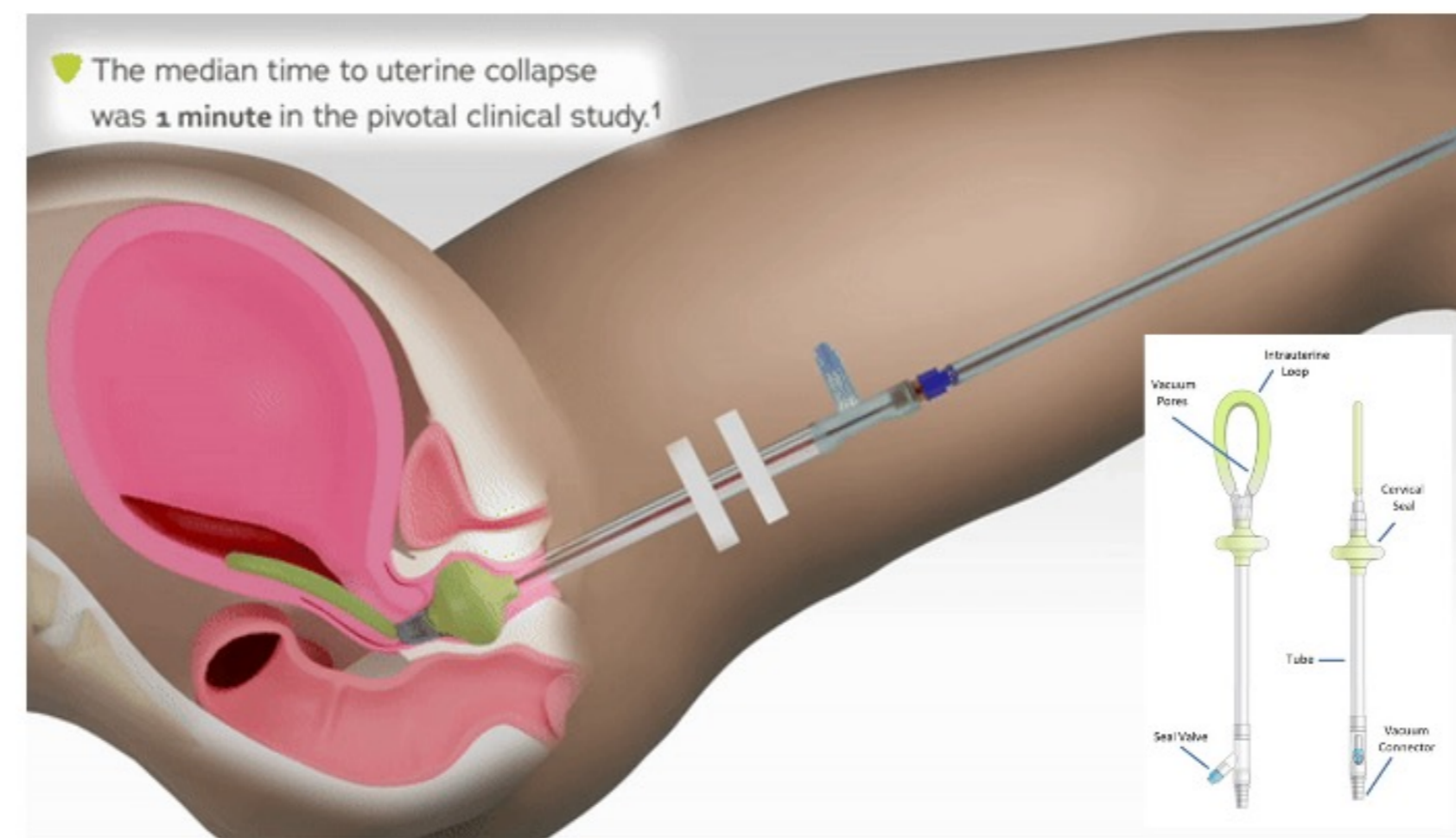
A 23-year-old G3P3 Caucasian female underwent a spontaneous vaginal delivery under the care of a certified nurse midwife in a rural hospital. An attempt was made to express the placenta, which was unsuccessful, leading to manual extraction. However, following extraction, a palpable round vaginal mass and a nonpalpable cervix were appreciated. A stat consultation for an OB/GYN physician was placed and on arrival, a diagnosis of an acute fourth degree uterine inversion was made. Immediate manual uterine replacement was attempted and failed.

PMH: None.
PSH: None.
Allergies: None.
Medications: Ferrous sulfate 325MG tablet
FH: Denies.
SH: Denies tobacco, alcohol, and recreational drug use. Single.

ROS: +dyspnea

Physical Examination at Operative Room arrival:
VITAL SIGNS T: 97.6F HR: 130 RR: n/a BP: 47/23 mmHg SpO2: 6% on room air, Ht: 5ft 5 in, Wt: 158lbs, BMI: 28.9kg/m²
GU: large mass protruding from vagina with no palpable cervix

JADA System



Clinical Course

- Patient taken to the operating room, with blood pressure of 47/23 and estimated blood loss of 600mL.
- Magnesium sulfate, blood products, fluid resuscitation and general anesthesia were administered.
- Manual replacement attempted and failed.
- Pfannenstiel incision was created, and abdominal manual replacement of uterine fundus attempted and failed.
- Huntington procedure performed with the use of Babcock clamps attempted successfully.
- Magnesium sulfate discontinued.
- Pitocin and fundal massage initiated to encourage uterine contraction
- Due to continued uterine atony, Tranexamic acid, Methergine, Hemabate, and Cytotec were administered without success.
- Attempted and successful insertion of JADA intrauterine device with cessation of uterine bleeding
- Patient was stabilized to a blood pressure of 122/77 and admitted to the ICU for continued care and discharged 4 days later.

Discussion

Uterine inversion is a rare complication that can occur in post-partum or spontaneously, with ninety-five percent of cases occurring in the post-partum period¹. Due to infrequent presentation of uterine inversion and resulting relative physician inexperience, recognizing uterine inversion is a crucial part in initiating proper treatment.

Once recognized, uterine inversion has established management including attempting fluid replacement, immediate manual replacement of the fundus, and if failed, various surgical techniques, such as the Huntington procedure used in this case^{8,9}. However, once the uterus has been replaced into the abdomen, uterine atony secondary to muscle relaxants and resultant postpartum hemorrhage (PPH) has to be managed. First line treatment includes uterotonics, such as Oxytocin, Tranexamic acid, Methergine, Hemabate, and Cytotec¹⁰. Various case reports historically make mention of refractory PPH treatment with a balloon tamponade device, a standard device used in refractory PPH management with efficacy of 85.9%^{3,4,5}.

However, a newly FDA approved intrauterine suction device, the JADA system creates a negative pressure in the uterus to stimulate uterine contraction and therefore coiling of the spiral arteries. The JADA has been shown to have a refractory PPH management efficacy of 95.8% in the recent RUBY trial⁶. The RUBY trial demonstrates using uterine suction devices should be considered in the management of postpartum hemorrhage, a complication seen in 37.7% of uterine inversion cases¹¹. The JADA is the only FDA approved intrauterine vacuum induced hemorrhage control device in the United States, and recently proven efficacy should be considered when uterine contraction is not achieved with first line measures¹².

Conclusion

- - The puerperal uterine inversion is a rare, life-threatening complication of the third stage of labor, that although difficult to recognize, has established treatment. However, current treatment for uterine atony and resultant PPH includes balloon tamponade with an efficacy of 85.9%⁵.
- - Although previously unseen in published literature regarding uterine inversion management, use of the newly FDA approved low-level vacuum device, the JADA, proved sufficient in this case encouraging appropriate uterine contraction and resolution of PPH. Additionally, proven efficacy for PPH treatment was reported to be 95.8% in comparison with balloon tamponade (85.9%)^{5,6}.

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